



Social media competitive analysis and text mining: A case study in the pizza industry

Wu He^{a,*}, Shenghua Zha^{b,1}, Ling Li^{a,c,2}

^a Department of Information Technology and Decision Sciences, College of Business and Public Administration, Old Dominion University, Norfolk, VA 23529, USA

^b Center for Instructional Technology, James Madison University, Harrisonburg, VA 22807, USA

^c College of Business and Public Administration, Old Dominion University, Norfolk, VA 23529, USA

ARTICLE INFO

Article history:

Received 27 September 2012

Accepted 2 January 2013

Available online 4 February 2013

Keywords:

Social media

Facebook

Twitter

Case study

Pizza industry

Competitive analysis

Competitive intelligence

Competitor intelligence

Actionable intelligence

Text mining

Content analysis

ABSTRACT

Social media have been adopted by many businesses. More and more companies are using social media tools such as Facebook and Twitter to provide various services and interact with customers. As a result, a large amount of user-generated content is freely available on social media sites. To increase competitive advantage and effectively assess the competitive environment of businesses, companies need to monitor and analyze not only the customer-generated content on their own social media sites, but also the textual information on their competitors' social media sites. In an effort to help companies understand how to perform a social media competitive analysis and transform social media data into knowledge for decision makers and e-marketers, this paper describes an in-depth case study which applies text mining to analyze unstructured text content on Facebook and Twitter sites of the three largest pizza chains: Pizza Hut, Domino's Pizza and Papa John's Pizza. The results reveal the value of social media competitive analysis and the power of text mining as an effective technique to extract business value from the vast amount of available social media data. Recommendations are also provided to help companies develop their social media competitive analysis strategy.

© 2013 Elsevier Ltd. All rights reserved.

1. Introduction

Social media have profoundly changed our lives and how we interact with one another and the world around us (Qualman, 2009; Safko & Brake, 2009). Recent research indicates that more and more people are using social media applications such as Facebook and Twitters for various reasons such as making new friends, socializing with old friends, receiving information, and entertaining themselves (Kaplan & Haenlein, 2010; Keckley & Hoffman, 2010; Park, Kee, & Valenzuela, 2009; Raacke & Bonds-Raacke, 2008; Shih, 2009). As a result, many large companies are adopting social media to accommodate this growing trend in order to gain business values such as driving customer traffic, increasing customer loyalty and retention, increasing sales and revenues, improving customer satisfaction, creating brand awareness and building reputation (Culnan, McHugh, & Zubillaga, 2010; Kietzmann, Hermkens, McCarthy, &

Silvestre, 2011; Sinderen & Almeida, 2011; Weber, 2009). Typical activities supported by social media applications include branding (advertising, marketing, and content delivery), sales, customer care and support, product development and innovation (Culnan, McHugh, & Zubillaga, 2010; Di Gangi, Wasko, & Hooker, 2010). An example is that many hotel chains such as Starwood Hotels and Resorts have been leveraging the power of social media in recent years to stay connected with guests, seek feedback from guests on their service, address customers' complaints and issues, and help potential guests make their travel decision (Lanz, Fischhof, & Lee, 2010; Lollis, 2011; Müller, 2011).

The wide adoption of social media tools has generated a wealth of textual data, which contain hidden knowledge for businesses to leverage for a competitive edge. In particular, marketers can dig into the vast amount of social media data to detect and discover new knowledge (e.g., brand popularity) and interesting patterns, understand what their competitors are doing and how the industry is changing, and use the findings and improved understanding to achieve competitive advantage against their competitors (Dey, Haque, Khurdiya, & Shroff, 2011; Governatori & Iannella, 2011). Decision makers can also use the findings to develop new products or services and make informed strategic and operational decisions. It is believed that competitive intelligence can help organizations to

* Corresponding author. Tel.: +1 757 683 5008; fax: +1 757 683 5639.

E-mail addresses: whe@odu.edu (W. He), zhasx@jmu.edu (S. Zha),

lli@odu.edu (L. Li).

¹ Tel.: +1 540 568 4852.

² Tel.: +1 757 683 6455; fax: +1 757 683 5639.

realize strengths and weaknesses, enhance business effectiveness, and improve customer satisfaction (Lau, Lee & Ho, 2005). Competitive intelligence is defined to be “the art of defining, gathering and analyzing intelligence about competitor’s products, promotions, sales etc. from external sources” (Dey, Haque, Khurdiya, & Shroff, 2011). A successful organization should have the ability to process all available information (e.g., customers’ opinions, product prices from competitors, reviews of services and products), identify what has happened and predict what will happen in the immediate future. As many companies are not familiar with social media competitive intelligence (Dai, Kakkonen, & Sutinen, 2011) and analysis and lack enough understanding of the process of mining social media data, the authors conducted a case study to illustrate how social media data can be transformed into knowledge through text mining.

The remainder of the paper is organized as follows. Section 2 is a brief review of text mining. Section 3 explains the research questions explored in this paper, the context of the study, details its methodological approach (samples and procedures) as well as the key findings. Section 4 discusses the findings in depth. Section 5 discusses the implications and recommendation for social media competitive analysis. Section 6 concludes with suggestions for future research.

2. A brief review of text mining

Text mining is an emerging technology that attempts to extract meaningful information from unstructured textual data. Text mining is an extension of data mining to textual data (Ananiadou, 2008; Liu, Cao, & He, 2011; Romero & Ventura, 2010; Zafra & Ventura, 2009; Zeng et al., 2012b). Study indicates that an estimated 80% of an organization’s information is contained in text documents, such as emails, memos, customer correspondence, and reports (Tan, 1999). To glean useful information from a large number of textual documents quickly, it has become imperative to use automated computer techniques (He, 2013a; Liu, Cao, & He, 2011). Text mining is focused on finding useful models, trends, patterns, or rules from unstructured textual data such as text files, HTML files, chat messages and emails (Abdous & He, 2011; Chiang, Lin, & Chen, 2011; Hung & Zhang, 2008; Lin, Hsieh, & Chuang, 2009; Romero, Ventura, & Garcia, 2008). As an automated technique, text mining can be used to “efficiently and systematically identify, extract, manage, integrate, and exploit knowledge from texts” (Ananiadou, 2008). Different from traditional content analysis, text mining is mainly data driven and its main purpose is to automatically identify hidden patterns or trends in the data (Tsantis & Castellani, 2001) and then create interpretation or models that explain interesting patterns and trends in the textual data (Guo, Xu, Xiao, & Gong, 2012; Romero, Ventura, & Garcia, 2008).

Many researchers have successfully used text mining techniques to analyze large amounts of textual data in business (Ingvaldsen & Gulla, 2012), health science (Li, Ge, Zhou, & Valerdi, 2012) and educational domains (Abdous & He, 2011; Hung, 2012). Witten, Don, Dewsnip, and Tablan (2003) used text mining techniques to extract metadata from documents in a digital library and to enrich documents by marking up appropriate items in the text. They found that text mining can add additional values to the documents stored in the digital library and enrich the user experience. Tane, Schmitz, and Stumme (2004) used text mining to group e-learning resources and documents according to the similarities among different topics. Abdous and He (2011) used text mining techniques to analyze the online questions posted by video streaming students and identified a number of learning patterns and technology-related issues. Fuller, Biros, and Delen (2011) used text mining to detect deception and lies in real world data.

Their results show that automated text mining techniques have the potential to aid those who must try to detect lies in text. Hung (2012) used clustering analysis as an exploratory technique to examine e-learning literature and visualized patterns by grouping sources that share similar words, attribute values and coding rules.

Some major applications of text mining include: clustering, information extraction (text summarization), and link analysis (He, Chee, Chong, & Rasnick, 2012; Hung, 2012; Ingvaldsen & Gulla, 2012; Wetzstein, Leitner, Rosenberg, Dustdar, & Leymann, 2011). In particular, clustering analysis is a well-studied technique in data mining (Lin, Hsieh, & Chuang, 2009) and has the advantage of uncovering unanticipated trends, correlations, or patterns from data (Ananiadou, 2008). Currently, there are a wide range of tools that can be used for text mining, such as the SPSS Modeler (formerly Clementine), Leximancer and the SAS Enterprise Miner. These tools use sophisticated computing paradigms including decision tree construction, rule induction, clustering, logic programming, and statistical algorithms to find insights and patterns from unstructured textual data (Abdous & He, 2011; Duan, Street, & Xu, 2011; Duan & Xu, 2012; Romero & Ventura, 2010; Zeng et al., 2012b). Due to the powerful capabilities of text mining, it is believed that applying text mining to social media data can yield interesting findings on human behavior and human interaction (Abdous, He, & Yen, 2012; Barbier & Liu, 2011; He, 2013b; Pang & Lee, 2008).

3. A case study

3.1. Research questions

Contents generated by users (UGCs) have been considered important in social media studies (Aggarwal, Gopal, Sankaranarayanan, & Singh, 2011; Akehurst, 2009).

This study examined the social media sites of the three largest pizza chains and applied text mining to analyze unstructured text content on their Facebook and Twitter sites. Specifically, the study attempts to answer the following questions:

- What patterns can be found from their Facebook sites respectively?
- What patterns can be found from their Twitter sites respectively?
- What are the main differences in terms of their Facebook and Twitter patterns?

3.2. Methodology

3.2.1. Context of the study

An influential IT study published in MIS quarterly by Chiasson and Davidson (2005) indicates that the food and restaurant industry received little attention in IT research and suggests that more attention to the food and restaurant industry in IS research is needed. As the U.S. Pizza industry is one of the first industries that has entered the social media arena for business purposes and has a large social media user base, we decided to conduct our social media competitive analysis with the three largest pizza chains: Pizza Hut, Domino’s Pizza and Papa John’s Pizza in our case study. An extensive Internet search also indicates that so far there is no academic article that investigates how large pizza chains are using social media to support their business although large pizza chains such as Papa John’s, Domino’s Pizza and Pizza Hut have been very active in social media marketing (Barrett, 2010).

According to *PMQ Pizza Magazine* (2010), the pizza industry represents 11.7% of all restaurants and accounts for more than 10% of all food service sales. The annual pizza sales are over \$36 billions.

متن کامل مقاله

دریافت فوری ←

ISIArticles

مرجع مقالات تخصصی ایران

- ✓ امکان دانلود نسخه تمام متن مقالات انگلیسی
- ✓ امکان دانلود نسخه ترجمه شده مقالات
- ✓ پذیرش سفارش ترجمه تخصصی
- ✓ امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
- ✓ امکان دانلود رایگان ۲ صفحه اول هر مقاله
- ✓ امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
- ✓ دانلود فوری مقاله پس از پرداخت آنلاین
- ✓ پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات